

REMARKS

The applicant respectfully requests reconsideration in view of the amendments and the following remarks. The applicant has amended the specification and abstract as required by the Examiner.

Claims 1-4 are rejected under 35 U.S.C. 102(e) as being anticipated by US 6,916,554 (Ma et al.). Claims 1-4, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2001/0019782 A1 (Igarashi) as evidenced by US 5,484,922 (Moore). The applicant respectfully traverses these rejections.

Rejection Under 35 U.S.C. 102

Claims 1-4 and 16 are rejected as being anticipated by Ma et al. The filing date of Ma et al. is November 06, 2002 whereas the foreign priority date of the present application is April 05, 2002. The applicant has enclosed an English certified translation of the priority document. The applicant believes that they are entitled to their effective filing date of April 05, 2002. Therefore, the applicant has antedated this reference. For the above reasons, this rejection should be withdrawn.

Rejection Under 36 U.S.C. 103

Claims 1-4 and 16 are rejected as being unpatentable over Igarashi as evidenced by Moore. Igarashi discloses different iridium complexes, such as iridium complexes of formula (3) having a substituted phenylpyridine ligand. A large variety of possible substituents are disclosed in Igarashi (see paragraph [0050]), among those also the cyano group. However, Igarashi does not disclose, which effect the substituents have on complexes of its formula (3) and in which positions these substituents should be bound. The Examiner is correct that Igarashi does not

explicitly disclose a compound of the instant formula (I) (see the bottom of page 4 of the Office Action).

Furthermore, the Examiner is not correct with his statement that complex I-31 (page 13) are similar and differs only in the position of the cyano group on the phenyl ring. Complex I-31 is an example of a complex of Igarashi's formula (4), but not of Igarashi's formula (3). Complexes of formula (4) differ from complexes of formula (3) in that the ligand forms a 6-membered ring with the iridium, whereas in formula (3) the ligand forms a 5-membered ring with the iridium. This results in different physical properties as the phenyl ring and the pyridyl ring in complexes of formula (3) are conjugated, but they are not conjugated in complexes of formula (4).

The complexes of the present invention differ therefore from the complexes disclosed by Igarashi in that they are iridium complexes with phenylpyridine ligands and related ligands wherein the para-position of the phenyl group is substituted by a cyano group. The applicant has informed the undersigned that this has the technical effect that the complexes emit blue phosphorescence (see page 3, lines 6-15 of the applicant's specification) and show a very flat efficiency curve, which means that high efficiencies are still achieved at high luminosities as can be seen from Figure 1 of the present invention. A further advantage of these complexes is that they can be synthesized easily and in high yield by the process disclosed in the present invention.

The technical problem underlying the present invention is therefore to find compounds, which show blue phosphorescence with flat efficiency curves and which can be synthesized easily and in high yield (see page 3, lines 22-27 of the applicant's specification). The complexes of the claims of the present invention solve this technical problem.

It would not have been evident from the disclosure by Igarashi that particularly complexes of formula (3), which are substituted with a cyano group in para-position of the

iridium on the phenyl group, would result in improvements over the prior art. In particular, complexes showing blue phosphorescence have not been easily available before the priority date of the present invention. Furthermore, the Examiner is not correct in supposing that substitution of complex I-31 in the para-position instead of the meta-position would lead to complexes of the present invention, as the ligand structure of complex I-31 is different as discussed above (forms a 6-membered ring with the iridium).

Furthermore, Moore would not lead the person skilled in the art to the Invention. The only information disclosed by Moore is that the Hammett σ -constant of the cyano group is similar (but not identical) for the meta-position and the para-position (0.61 and 0.66 respectively (see col. 8, line 60)). However, the Hammett constant might have some influence on the physical properties of the complex, but does not determine all physical properties of the complex. It is well known in the art that small differences in the position of a substituent or in the physical properties of a substituent, as expressed by small differences in the Hammett constant, have a large influence on the physical properties of the complex, such as emission color, efficiency, etc. This difference is even more pronounced in the present case as not only the position of the cyano group is different in complexes of the present invention compared to complexes I-31, but also the ligand has a completely different structure and leads to a completely different binding to the metal.

It can therefore be summarized that one of ordinary skill in the art would not conclude from Igarashi that the substitution of complexes of general formula (3) or complex I-31 in para-position with a cyano group would result in complexes with particularly good properties. Also the combination of Igarashi with Moore would not lead the person skilled in the art to the invention. Claim 1 as well as claims 2-4 and claim 16 are therefore inventive over Igarashi in view of Moore. For the above reasons, this rejection should be withdrawn.

In view of the above amendment, applicant believes the pending application is in condition for allowance.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 03-2775, under Order No. 14113-00104-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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